

Remarks:

Reconsideration of the Office action dated November 30, 2004 and allowance of the present application are respectfully requested in view of the foregoing amendment and the following remarks.

In the November 30, 2004 Office action, the Examiner objected to the abstract and required that "predicted" in line 7 be replaced with "predicting". Claims 1-6 and 16-22 were rejected under 35 U.S.C. 102(b) as being anticipated by Nagao et al. Further, claims 7-8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nagao et al. in view of Furuya. Claims 9-13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Campbell. Claims 14 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Campbell and further in view of Mestha et al.

No claims are being amended, added or cancelled. Claims 1-22 remain in the application.

Abstract

The Examiner required that "predicted" be changed to "predicting" in line 7 of the abstract. It appears that making the requested change to line 7 would be inappropriate, and that it was intended that the reference be to the first line of the abstract. The above amendment makes the requested change in that line.

35 U.S.C. 102(b): Nagao et al.

Applicants respectfully traverse the Examiner's rejection of claims 1-6 and 16-22. Nagao et al. disclose "an image forming apparatus which can obtain an image having excellent density and gradation by correcting the density of an image to be formed on an image receiver sheet on the basis of the measurement result of the

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density of a particular pattern image formed on the image receiver sheet" (Column 2, lines 29-34), and "a method for measuring the transfer efficiency" (Column 4, line 42). This is provided by forming a latent image on the photosensitive drum 1K, visualizing the latent image by the developing device 4K, and reading the visualized image "by the light receiving element 19a, and the read result is converted into density data. . . as density D1." (Column 4, lines 44-52) "Thereafter, the visualized image is transferred onto the transfer belt 6a as a test patch 22 by the transfer charger 6K. The test patch is again read by the LED 12a and the light receiving element 12b disposed above the transfer belt 6a. The read result is converted into density data . . . as density D2. Further, the controller 15 compares the density D1 and the density D2 to determine the transfer efficiency $D2/D1$." (Column 4, lines 53-61) A correction means is provided for correcting the transfer efficiency. (Column 4, lines 62 and 63)

It is seen then that Nagao et al. determine toner density on the photosensitive drum 1K and then again on the transfer belt 6a immediately after transfer from the photosensitive drum. The apparatus of Nagao et al. thus does not show "predicting a settled test patch appearance based on the determined appearance-affecting condition and the initial test patch appearance" or "comparing the predicted settled test patch appearance with the desired test patch appearance to yield a correction factor", as required by claims 1-8. Nagao et al. also do not disclose "a data storage device including a plurality of color shift vectors selected to predict color settling under various appearance-affecting conditions" or "a processor linked to the data storage device and the input, the processor being configured to apply an appropriate color shift vector to an initial color to predict a settled color under the selected

appearance-affecting condition", as required by claims 16-21. Further, Nagao et al. do not disclose "a processor linked to the data storage device capable of applying the appropriate color shift vector for the measured environmental condition to an initial scanned color to yield a predicted settled color for the measured environmental condition", as required by claim 22.

These claims variously include reference to settled test patch appearance, color settling, or settled color. As stated in the background section of the application:

"Unfortunately, a variety of factors can impact the quality of the final image. By final image is meant the appearance of the image, including color, that is stable with respect to time. Variations in colorant density, colorant composition, colorant delivery rate, and media composition can result in wide differences in the appearance of an image after printing. For example, several post-printing modifications of the printed output, such as applying a protective sealant or laminating the output, typically also affect the color of the final image. A printed image can also "settle", or change color, after printing. This color shift is in part due to the mobility of dye molecules on and within the print medium as the freshly applied colorant ages. Inkjet dyes, in particular, are typically applied as aqueous solutions. Until such ink is completely dry, the migration of dye molecules on or in the print medium can continue to alter the appearance of the image. Differential migration and diffusion of individual color components in a multi-color image can also lead to a blurring of details, darkening of the image, or color shift in the image as a whole." (Page 2, lines 16-30)

As further stated in the background section, "[t]here is also no rapid and convenient way to allow for changes to the appearance of a printed image due to variations in print medium, lamination, or other image-altering process. What is needed is a method of correcting color output in an imaging system that actively compensates for a variety of post-printing changes to the image color." (Page 3, lines 6-10)

A definition of "settle" is "to come to rest", according to Random House Webster's Unabridged Dictionary, Random House, Inc. (1999). This corresponds

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with the use of the term in the application. The description states on lines 11-13 of page 10 that "[a] 'settled' test patch is a test patch that has aged or matured for a time sufficient for a color shift of the test patch due to one or more appearance-affecting conditions to be effectively or substantially complete." The term "settle" thus refers to a change in appearance in an image after printing that "comes to rest".

Nagao et al. only deals with the efficiency of transfer of toner from a photosensitive drum during a printing process. There is no disclosure or suggestion of providing a correction due to settling or changes in appearance of an image after printing.

35 U.S.C. 103(a)

Claims 7 and 8

Applicants respectfully traverse the Examiner's rejection of claims 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over Nagao et al. in view of Furuya. Claims 7 and 8 are distinguishable from Nagao et al. for at least the reasons discussed above with reference to the rejection under 35 U.S.C. 102.

Claims 9-13

Applicants respectfully traverse the Examiner's rejection of claims 9-13 under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Campbell. The Examiner states that Ito discloses all elements of claim 9 except for permitting test patches to settle for a predetermined time. Campbell is stated to disclose "permitting test patches to settle for a predetermined time."

Ito discloses an ink jet printing apparatus that prints a test pattern, reads the density of the printed test pattern, sets correction data for correcting the density data, and corrects the density data. (Column 4, lines 9-34) Campbell discloses an

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"aqueous ink offering good waterfastness, rub resistance, and stability suitable for use in ink jet printers. . ." (Abstract) "For the bleed test, a test pattern of four one-inch squares . . . was printed on a sheet. The test pattern was dried under ambient conditions for one hour, then cut from the sheet. The optical density of the printed squares was measured. The test pattern was then immersed in water for five minutes, removed from the water, and air dried. The optical density was measured again." (Column 5, lines 60-67)

Claims 9-13 are directed to

A method of predicting ultimate appearance of an image produced by an imaging system, the method comprising:
printing a plurality of test patches;
optically scanning the test patches to determine an initial color for each test patch;
permitting the test patches to individually settle under an appearance-affecting condition for a predetermined time;
optically scanning the test patches to determine a final color for each test patch;
calculating a shift vector for each test patch from the initial color to the final color that is a function of the appearance-affecting condition; and
applying the appropriate shift vector for a field appearance-affecting condition to a field test patch to yield a predicted field test patch color.

Ito only measures toner density immediately after it is printed for controlling the density level applied during printing so that streaks produced by uneven imaging can be corrected. Campbell is testing the durability of his aqueous ink under adverse conditions. To test the waterfastness of the ink, he begins his analysis after it has dried. Campbell is interested in learning whether dried ink bleeds when it is put in water. Ito and Campbell thus disclose measuring image density for two very different reasons. Campbell dries the ink because he wants to determine the characteristics of the ink after it has dried. That is not an issue that Ito is at all

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concerned about. A person skilled in the art would not add the one-hour waiting period disclosed by Campbell to the streak-correcting techniques of Ito because the purposes for the two techniques are unrelated. Applicants submit that these two references are for non-analogous art, and are not properly combined.

Further, for Ito's purpose of determining streaking in an image, measuring an image one hour after the image is printed will not give any better information about the distribution characteristics of ink applied by the printing apparatus. There would be no motivation by one skilled in the art to combine the teachings of these references. There is no disclosure of changing of image appearance with time after the image is printed. Therefore, even if these references are applied in combination, they do not disclose or suggest Applicants' claimed invention.

Claims 14 and 15

Applicants respectfully traverse the Examiner's rejection of claims 14 and 15 under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Campbell, and further in view of Mestha et al. Claims 14 and 15 are distinguishable from Nagao et al. for at least the reasons discussed above with reference to the rejection of claims 9-13 under 35 U.S.C. 103.

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Applicants believe that this application is in condition for allowance, in view of the above amendment and remarks. Accordingly, applicants respectfully request that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

Respectfully submitted,

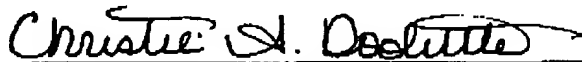
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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to Examiner C. Baker, Group Art Unit 2626, Assistant Commissioner for Patents, at facsimile number (703) 872-9306 on February 22, 2005.



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